

The Use of Smartphone Assisted Picture Word Inductive Models to Improve Basic Literacy

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Abstract

Basic literacy is highly needed to ease students' understanding of a concept. Therefore, it is necessary to deliver an innovative teaching approach to enhance students' basic literacy. This study aims to investigate the use of picture word inductive models with the help of smartphones to increase the basic literacy of elementary school students in grade one. This study employed a quantitative approach with quasi experimental methods a pretest-posttest control group design. The population of this study was grade one from elementary school in Bandung City. The sample of this study was two classes (experimental and control) from each school which were selected randomly. The number of samples was 113 consisting of 57 students in the experimental class and 56 people in the control class. To collect data, we used a basic literacy test and analyzed it by using a t-test. This study shows that the use of picture word inductive models with the help of a smartphone can improve basic literacy. The findings of this study are that picture word inductive models with the help of smartphones can facilitate students who have different reading and writing abilities.

Keywords: *basic literacy; picture word inductive model; smartphone.*

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Introduction

Literacy is the ability to read and write which is known as literacy or literacy. This ability is believed to be able to form an independent person and be able to adapt himself to the development of science and technology (IPTEK). Literacy has a very important role in life, especially related to academic potential. The early stages of literacy usually occur in early childhood. At this stage, the child will usually be introduced to the sounds and letters that will form words, phrases, or sentences. Because of this, this stage has received a lot of attention from many experts, practitioners, and researchers who are concerned with this field. Thus, literacy awareness indicates an advanced (modern) society, as a necessity in the 21st century, that is, people are required to be literate (literate). The literate referred to here is the ability to: 1) access information efficiently and effectively, 2) evaluate information critically and competently, and 3) use information accurately and creatively (Zhao & Lornklang, 2019).

The government's efforts to improve literacy skills include the launch of the National Literacy Movement (NLM) program, whose implementation reaches the Education Unit in the form of the School Literacy Movement (SLM). The SLM program consists of six basic literacy, namely literacy, numeracy, science literacy, financial literacy, cultural and civic literacy, and digital literacy. Given that literacy or basic literacy has a lot of impact on other literacy and

student learning outcomes, it is very important to explore literacy (Khofifah & Ramadan, 2021); (Sari, 2020). Literacy to read and write covers all basic literacy because all fields or other basic literacy such as numeracy, science, digital, finance, culture, and citizenship also use the ability to read and write as their basic abilities. (Kemdikbud, 2021).

Literacy to read and write is a very important skill and supports children's development. Literacy is literacy that children are expected to be able to read and write complex sentences with, correct punctuation, and make simple paragraphs and understand them. Moreover, the expected literacy is in accordance with 21st-century skills, namely *collaboration, communication, critical thinking, and creativity* (Rahman et al., 2019).

Furthermore, experts suggest that literacy be introduced from an early age, especially literacy with fun and concrete methods (Fitria et al., 2022). *Early* literacy is considered important in life because from reading and writing one's knowledge will increase. The importance of *early literacy* is revealed by several research results which show that *early literacy* has a central role in subsequent literacy success, including in academic achievement, failure, or success in academics is influenced by literacy skills. (DH, & Kim, YS 2013).

Good reading skills will lead to lifelong reading and pleasure, good reading skills need to be instilled from an early age. The ability to read is not just saying a collection of letters, but also being able to understand what has been read. Children aged 3-8 years are an important period in developing reading skills. In order to achieve success in school and succeed in the world in general, children need to know how to read. Early success in reading is also a strong predictor of later literacy achievement which, in turn, is highly related to performance in various academic areas. (Rahman, Widya, et al., 2020). If literacy is not given early on, children will have difficulty understanding information in their daily lives. besides that academically children will lag behind in understanding other subjects and also tend to influence reading motivation (Maulani et al., 2021). A child who has good reading skills in early elementary school will have reading ready for learning and for pleasure in the years to come. This confirms that students who become good readers in the early grades of elementary school will become good readers in later grades (Rahman et al., 2021).

Writing ability is as important as reading. Although the ability to write is one aspect of the final stage of language skills that must be mastered by students. This is important to do considering the competency of learning to write is that students are able to express various thoughts, ideas, opinions, and feelings in various writings. Writing is also closely related to reading, speaking, and even watching (Rahman, Hartati, et al., 2020). Furthermore, writing is one of the skills in the language. Writing is a series of activities a person expresses his thoughts through written language to be read or understood by others (Gie, 2002 (Ninawati, 2019). In addition, writing can increase intelligence, develop initiative and creativity, foster courage and encourage will, as well as the ability to gather information (Suparno , 2007 (Ninawati, 2019).

PISA finding data related to the average score of reading ability obtained by Indonesian students is still below the average of OECD countries (Figure 1 & 2). Indonesian students' comprehension abilities are weak in understanding paragraph ideas, reading graphs, understanding relationships between facts, linguistic logical relationships, and finding reading ideas (OECD, 2016).

More broadly, research results from several survey institutions state that the literacy skills of Indonesian students are still low. *The Program International Reading Literacy Study* (PIRLS) in 2011 (the last year PIRLS included Indonesia as one of its participants) showed unfavorable results, namely Indonesia ranked 40th out of 49 countries surveyed. Indonesia is also ranked 41st out of 45 countries with a Reading Achievement Distribution (DPM) condition lower than the 500 scales (midpoint/standard PIRLS scale) (Mullis et al, 2012; Baswedan, 2014).

In 2016 until now a survey was carried out again through the Indonesia National Assessment Program (INAP) (reported on puspendik.kemdikbud.go.id), that the literacy of Indonesian students was 46.83% lacking, 47.11% sufficient, 6.06% good. Furthermore, the

acquisition of a national score based on literary and non-literary content in Indonesia is based on the 2016 INAP. The results show that the literary content domain obtained an average score of 27.65, while the non-literary content domain obtained a higher score of 43.34 out of the total number of questions 95. In addition, the low literacy of Indonesian students is also evidenced by the results of a study conducted by Central Connecticut State University in New Britain, Conn., USA, in 2016 with the theme World's Most Literate Nations, which showed Indonesia's literacy ranking was in the order of 60 out of 61 countries. Weak reading skills continue to occur so that more than 55% of students aged 15 on the PISA test are functionally illiterate, that is, they can read texts but are unable to answer questions according to the texts (World Bank, 2018; (I. Pratiwi et al., 2020)

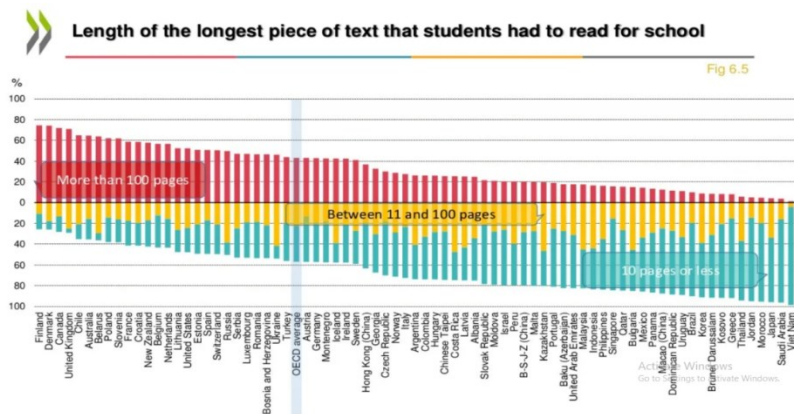


Figure 1. Diagram of Text Length Data Students Read at School

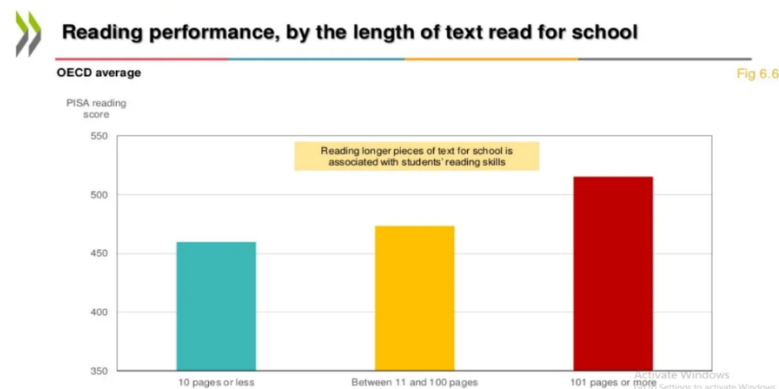


Figure 2. Diagram of Reading Skills Based on Text Length

Source: (OECD, 2021)

The low literacy of students in Indonesia is caused by many factors. The factors in question are internal and external factors. The frightening reading experience is an internal factor. While the situation of unavailable books, low reading culture, bad influence of technology, inadequate library available, and boring language learning, are external factors that arise from outside the students (Hartati et al., 2021).

Learning models related to literacy development already exist and are often carried out by teachers. However, the existing models tend to be drilled in nature giving rise to the above internal and external factors. The implication of the emergence of these factors causes the development of literacy to be less than optimal.

A number of other studies indicate findings that early literacy skills in Indonesia are affected by a number of difficulties including difficulty reading fluently and difficulty understanding reading. (Chandra et al., 2021; Oktadiana, 2019; B. Pratiwi & Puspito Hapsari,

2020; Widyaningrum & Hasanudin, 2019). This condition is part of the failure of the literacy program which has not been able to run and has not achieved the expected goals.

Based on the above, in relation to the research conducted, the orientation of developing the literacy movement is a program that has a high level of urgency in its implementation. This is based on empirical facts based on the results of a survey of several elementary school teachers in the city of Bandung, which shows that some elementary school teachers do not yet have a specific research-based model for developing basic literacy. This of course has an impact on the low ability of students to read and write.

To overcome the above problems, we need a learning model that can improve students' basic literacy without boring them, on the contrary it is fun and stimulates higher-order thinking skills. In addition, the age of Elementary School (ES) students, especially the lower grades, is during the playing period. Playing can help children get to know the environment and eliminate anxiety and conflict and can stimulate other aspects of child development (Rais et al., 2018). Thus we need a learning model that is fun and can stimulate students' basic literacy.

Besides related to basic literacy, another problem that arises is about students' awareness of the environment. Global warming that occurs on earth tends to be the result of human activities that are not aware of their environment. The solution step to overcome this problem is to provide students with an early understanding of environmental education, so that they become humans who are aware of the environment. A good understanding of the environment will eliminate environmental problems (Febriasari & Supriatna, 2017). With students having good literacy related to green schools, it is expected to reduce the impact of environmental problems.

The material setting chosen for the green school aims to also introduce students to the concept of environmental education, greening, and the use of used goods. So that it can make a character for students in protecting the universe, especially in the school environment. The following is the survey data on teachers' understanding of green schools.

The Picture Word Inductive Model (PWIM) is assumed to be able to overcome problems related to literacy (Joyce & Weil, 2003). This model utilizes students' ability to think inductively. This learning model also allows students to design structural and phonetic analysis principles. Thus, this model has the main principle that students have the ability to generalize so that they can master language conventions. In its implementation, the teacher displays pictures that are known by students. Furthermore, students can connect words and pictures by identifying objects, so they can develop a vocabulary to improve their reading and writing skills. The essence of the pictorial word inductive model is that students can develop literacy based on 21st-century skills. PWIM is also identical to the components of Bruner's constructivist learning theory, namely the role of structure in learning, spiral curriculum, and discovery learning (Jiang & Perkins, 2013).

The application of PWIM has been carried out by several previous researchers to improve critical thinking (Rosyada, 2018), improve English vocabulary (Gu & Lornklang, 2021; Jiang & Dwyer Kyle, 2014), descriptive writing (Oktafiani & Husnussalam, 2021), and reading skills (Triwahyuni et al., 2020). However, PWIM research that adapts technological advances according to the times to facilitate the different ability characteristics of students, especially in first grade, is still limited. So the novelty of this research is the smartphone-assisted PWIM to develop basic literacy of 1st-grade elementary school students.

Reading is a process that is carried out and used by the reader to get the message the writer wants to convey through the medium of words or written language (Jannah et al., 2023). In this process, a group of words that are a unit will be seen at a glance so that the meaning of the words can be known (Çetinkaya et al., 2019; Damayanti & Febrianti, 2020). Reading has several functions as follows: reading to discover or find out about the discoveries that have been made by the characters, reading to find and find out what is unusual and reading to find

out what happened from that part of the story. So reading is finding what is unusual in the reading (Hamiddin & Saukah, 2020). Apart from reading, writing skills are equally important.

Writing in a simple sense is assembling letters into words or sentences. Writing ability means the ability to express ideas, opinions, and feelings to other parties through written language. The ability to write is obtained through a long process. Starting from knowing letters, copying letters, writing words, writing sentences, writing paragraphs, and so on to writing scientific papers. Of course, at the elementary school stage, the writing stage is not yet complex. Therefore, learning to write, continues to be studied until college (Rahman, Hartati, et al., 2020). If learning to write the beginning which is said to be the basic reference is good and strong, it is hoped that the results of developing writing skills to the next level will be good too (Christie & Roskos, 2009; Dere, 2019; Wijaya A. et al., 2018).

Writing is an activity that requires complex skills. The abilities needed include the ability to think regularly and logically, the ability to express thoughts or ideas clearly by using effective language, and the ability to apply written rules properly (Nurmawati et al., 2020; Rahman, Hartati, et al., 2020).

Basic literacy is understood as the ability to communicate and is considered as discourse proficiency. Basic literacy activities are activities that require a series of activities such as interpreting, obtaining, and using something that aims to collaborate with the environment (Mohammed Fahad Alsobaie, 2015). Basic literacy can be interpreted as the ability to understand what is read and written (Kemdikbud, 2021). Furthermore, reading comprehension will improve students' critical thinking skills (Zen et al., 2023).

Smartphones are a form of information and communication technology development that is more advanced than previous cellular models. Unlike earlier cellular models, smartphones have similar capabilities to computers, although they are still limited (Putri dkk., 2023). The capabilities of a smartphone are more than just the features, resolution, and systems found on mobile devices in general. *Smartphones* combine communication tools into sophisticated devices that can be used for various purposes such as seeking information, entertainment, playing online games, video calls, to online transactions. (Ul Haq, 2021). The presentation of detailed data related to the use of smartphones among children is still limited in research. however, regarding smartphone user data in 2018 there were 177.9 million people out of a total population of 265.4 million. It is assumed that smartphone users will experience an increase in 2020 data in line with the increase in the number of connected smartphones of 338.2 million units. From these data it can be concluded that the use of smartphones in children has also increased (Paridawati et al., 2021).

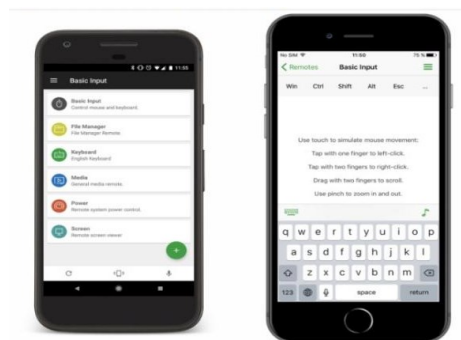


Figure 3. Smartphone/HP display that activates Unified Remote

Unified Remote is a mobile application from Unified Intents for remote controlling programs on a user's computer from their smartphone. The free translation of the mobile application from *Unified Intents* is used for remote control programs on the user's computer via a smartphone. With the help of the Unified Remote application you can remotely control the user's laptop as long as the wifi used is the same between the cellphone and laptop. Apart

from that, the Google Voice Typing application (GVT) on the cellphone can be used because the laptop is already connected to the cellphone. So that when you say a word or sentence on your cellphone via GVT, the writing will appear on the laptop screen. In the learning process in class, the laptop screen display will be reflected again on the whiteboard through *in focus* so that all students can see it. <https://g.co/kgs/hjwiAj>. More clearly can be seen in Figure 3.

Google Voice Typing (GVT) or typing is the default *software* from Android. To make it easier for users to type on the smartphone screen without touching at all but with voice commands. So the text will appear on the cellphone screen according to the letters/ words/sentences mentioned. How to use it is quite easy by activating the GVT icon on the cellphone. The voice typing command is a collection of several voice syntheses that have been collected into a voice database by the Google server. So if an example of voice synthesis spoken by the user is not found in the Google database, the typing will not work perfectly. But users can easily add sound samples to the Google server according to the wishes of each user itself. <https://www.duniaandroid.com/2014/12/arti-typing-google-voice-android.html>. With the help of this application, it is expected to be more active, creative, and think critically.

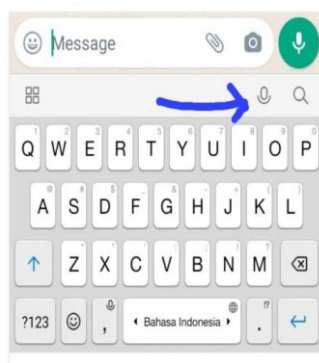


Figure 4. Position of the Google Voice icon on the cellphone

The picture word inductive model (PWIM) is an integrated and research-oriented approach to language arts to develop literacy skills (Calhoun, 1999; Joyce & Weil, 2003). The PWIM phase does not introduce phonics one by one as the previous model often did, as is the case in the most sequential approach which is common in synthetic phonics programs. In this model, students analyze words and develop phonic concepts inductively and through explicit instruction and concept acquisition lessons.

PWIM implementation is divided into the following phases:

Phase I : Studying photos/pictures and exploring the words from the photos.

Phase II : Analyzing the properties of words, forming categories, and developing a word solving strategy.

Phase III : Creating sentences.

Phase IV : Creating Titles

Phase V : classifying sentences

Phase VI : Writing from sentences to paragraphs or paragraphs

Methodology

This study used a quasi-experimental research method with a pretest-posttest control-group design without randomization (Borg, 2014). For more details, the design can be seen in Figure 5.

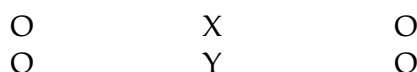


Figure 5. Pretest-posttest control-group design without randomization

O = observation, either a pretest or posttest

X = experimental conditions

Y = control or comparison condition

The population in this study were grade 1 elementary school students in the city of Bandung, West Java province, who used the independent curriculum. The sampling technique was purposive random sampling, amounting to 113 students. They came from 3 elementary schools in the city of Bandung, as many as 57 students from the experimental class and 56 students from the control class. The experimental class was given an inductive model of pictorial words, while the control class was given actions that were usually carried out by the teacher.

The basic literacy instrument used is the development of the initial reading and initial writing indicators. For more details can be seen in table 1.

Table 1. Beginning Reading and Beginning Writing Indicators

No	Variable	Indicator
1.	Beginning Reading	a. Phonological Awareness b. Decoding c. Linguistic Understanding d. Oral Reading Fluency e. Reading Comprehension
2.	Beginning Writing	a. Clarity of Writing Letters b. Writing accuracy in words or sentences c. Use of capital letters and punctuation.

Source: (Grimma et al., 2018)

Data collection was carried out through observation and non-formal tests according to the items in the instrument. The non-formal test in question is data collection in a setting when learning takes place so that students do not realize they are being tested. One of the items carried out by observation is the position of the student holding the writing instrument. Furthermore, examples of items carried out with the test are reading and writing letters, words, and sentences.

The process of data analysis using independent t-test and paired t-test. The independent t-test was used to determine whether there were differences in the basic literacy abilities of the two classes (experimental & control) during the pre-test and post-test. Meanwhile, the paired t-test was used to determine the significance of improving students' basic literacy abilities of both classes (experimental & control). The second t-test uses the SPSS application.

Results and Discussion

Based on the results of the data on the basic literacy abilities of grade 1 elementary school students obtained, then processing is carried out with the help of the SPSS 22.0 application. the first processing is to do an independent t-test to find out whether there are differences in basic literacy skills between the experimental class and the control class at the time of the pre-test. Processing results can be seen in table 2.

**Table 2. Descriptive Data on Students' Basic Literacy Ability
Experimental Class and Control Class at Pre-test**

Group Statistics						
Pre-test		N	Means	std. Deviation	std. Error	Means
Basic Literacy	experiment	57	44.68	10.425	1.381	
	control	56	44.50	9.942	1.329	

Based on table 2, it can be seen that the amount of data for the experimental class was 57 people and 56 people for the control class. For the average score and standard deviation of the experimental class is 44.68 and 10.425 while the control class is 44.5 and 9.942. From the pre-test data, it can be seen that the average basic literacy score between the experimental class and the control class is only 0.18 different than that of the experimental class.

Hypothesis Testing

Processing this data to test the hypothesis, 1) there was a significant difference in student's basic literacy skills between the experimental class during the pre-test. 2) there was a significant increase in student's basic literacy skills between the pre-test and post-test in the experimental class. 3) there was a significant increase in student's basic literacy skills between the pre-test and post-test in the control class. 4) there was a significant difference in student's basic literacy skills between the experimental class during the post-test.

**Table 3. Test for Differences in Students' Basic Literacy Abilities
Experimental Class and Control Class at Pre-test**

Independent Samples Test			Levene's Test for Equality of Variances		t-test for Equality of Means	
			F	Sig.	t	Sig. (2-tailed)
Basic Literacy	Equal variances assumed		.000	.998	.096 111	.924
	Equal variances not assumed				.096 110.903	.924

Based on table 3, it can be seen that the sig. 0.924 > α (0.05) then Hip. Zero is accepted, meaning that there is no significant difference in students' basic literacy abilities between the experimental class and the control class at the time of the pre-test. So it can be assumed that the two pre-test data between the experimental class and the control class are the same.

To find out the significance of increasing the basic literacy skills of experimental class students can be seen in tables 4 and 5.

**Table 4. Descriptive Data on Students' Basic Literacy Ability
Paired Samples Statistics**

Experiment	Means	N	std. Deviation	std. Error Means
Pre-test	44.68	57	10,425	1,381
Pair 1 Post-test	62.96	57	9010	1,193

From table 4, it can be seen that the average pre-test and post-test scores for the experimental class were 44.68 and 62.96 with a total sample of 57 students. The difference in the average score of the pretest and posttest is 18.28. Is the difference said to be a significant increase? To answer these questions can be seen in table 5.

**Table 5. Data on Significance Test Results for Increasing
Basic Literacy in Experimental Class
Paired Samples Test**

		Paired Differences		t	df	Sig.(2-tailed)
Experiment		Means	std. Deviation			
Pair 1	Pre-test – Post-test	-18,281	6,673	-20,683	56	.000

Based on table 5, it can be seen that the sig. $0.000 < \alpha$ (0.05) then Hip. Zero is rejected, meaning that there is a significant increase in students' basic literacy skills between the pre-test and post-test in the experimental class (Figure 6).

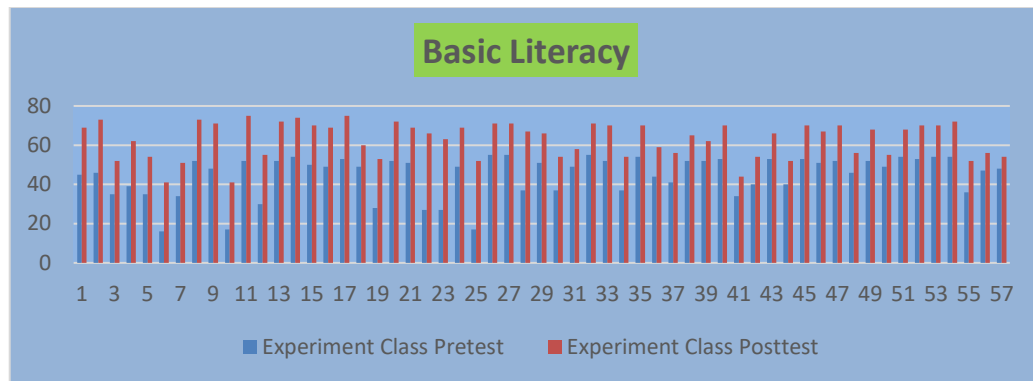


Figure 6. Graphic of Pre-Test and Post-Test of Students'

Basic Literacy in The Experiment Class

To find out the significance of increasing the basic literacy skills of control class students can be seen in tables 6 and 7.

Table 6. Descriptive Data on Basic Literacy Ability of Control Class Students

Paired Samples Statistics					
	control	Means	N	std. Deviation	std. Error Means
Pair 1	Pre-test	44.50	56	9,942	1,329
	Post-test	57.21	56	2.722	.364

From table 6, it can be seen that the average pretest and posttest scores for the experimental class were 44.50 and 57.21 with a total sample of 56 students. The difference between the pretest and posttest average scores is 12. 71. Can this difference be said to be a significant increase? To answer these questions can be seen in table 7.

Table 7. Data on Significance Test Results for Improved Basic Literacy in the Control Class
Paired Samples Test

		Paired Differences		t	df	Sig. (2-tailed)
control		Means	std. Deviation			
Pair 1	Pre-test – Post-test	-12,714	8,583	-11,086	55	.000

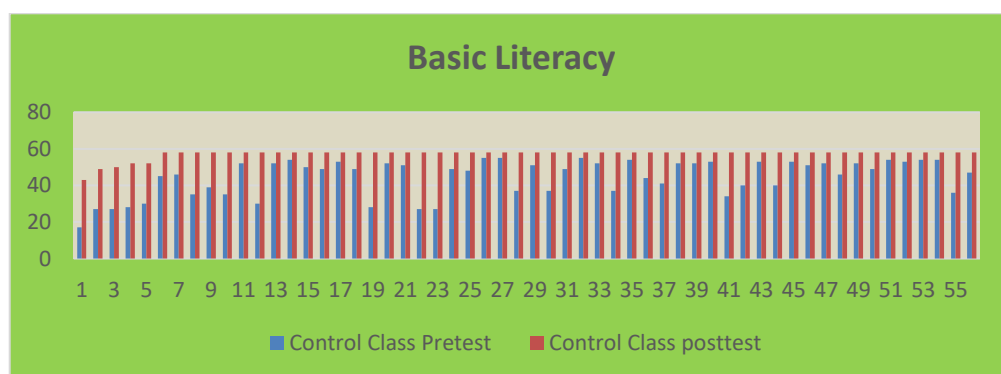


Figure 7. Graphic of Pre-Test and Post-Test of Students' Basic Literacy in The Control Class

Based on table 7, it can be seen that the sig. $0.000 < \alpha$ (0.05) then Hip. Zero is rejected, meaning that there is a significant increase in students' basic literacy skills between the pre-test and post-test in the control class (Figure 7).

Furthermore, to find out whether there are significant differences in students' basic literacy skills between the experimental class and the control class at the time of the post-test, it can be seen from tables 8 and 9.

**Table 8 . Descriptive Data of Students' Basic Literacy Ability
Experiment Class and Control Class During Post-test**

Group Statistics					
	Post-test	N	Means	std. Deviation	std. Error Means
literacy	experiment	57	62.96	9.010	1.193
	control	56	57.21	2.722	.364

Based on table 8, it can be seen that the number of post-test data for the experimental class was 57 people and 56 people for the control class. For the average score and standard deviation of the experimental class is 62.96 and 9.010 while the control class is 57.21 and 2.722. From the post-test data, it can be seen that the average score of students' basic literacy between the experimental class and the control class is 5.75 greater than the score of the experimental class. Is there a difference with this difference? The answers can be seen in table 9.

**Table 9 . Test Differences in Students' Basic Literacy Abilities
Experiment Class and Control Class During Posttest**

Independent Samples Test						
		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
literacy	Equal variances assumed	98.890	.000	4.575	111	.000
	Equal variances not assumed			4.609	66.304	.000

Based on table 9, it can be seen that the sig. $0.000 < \alpha$ (0.05) then Hip. Zero is rejected, meaning that there is a significant difference in students' basic literacy abilities between the experimental class and the control class at the time of the post-test. So it can be concluded that the treatment of the experimental class and the control class both can improve students' basic literacy skills, but the treatment of the experimental class (PWIM) is more effective than the control class.

The Influence of Smartphone-Assisted Pictorial Word Inductive Model (PWIM) on Basic Literacy Ability

The learning characteristics of first grade Elementary School students are still at the stage of concrete pre-operational development (Ginsburg & Oppen, 2016). At this stage, students need concrete objects to help their understanding. Literacy is an understanding of what students write and read (Zen et al., 2023). Understanding is part of the cognitive aspect, so literacy is a combination of language and cognitive aspects. The more complex the child speaks, the more directly proportional to his cognitive abilities.

PWIM presents learning activities starting with children thinking about words based on the pictures shown. In this process the child constructs his thoughts to produce a word based on the picture he sees (Calhoun, 1999). With the process of exploring words through pictures, students' reasoning abilities will be stimulated. In addition, students will also understand what they read and write. This exploratory activity can run even though students

cannot read and write because they are assisted by smartphones, namely the Unified Remote application and Google Voice. With the help of this application, students can explore their thinking skills in constructing words, sentences, and paragraphs. Words that have been explored from pictures will be made into simple sentences and paragraphs. With the help of the application, students can express the sentences or paragraphs they construct, so that the writing appears from what they express. After that students copy the writing in their books. This process is more effective in improving students' basic literacy skills because there are tools to optimize their potential. The smartphone-assisted PWIM process is by Vygotsky's learning theory.

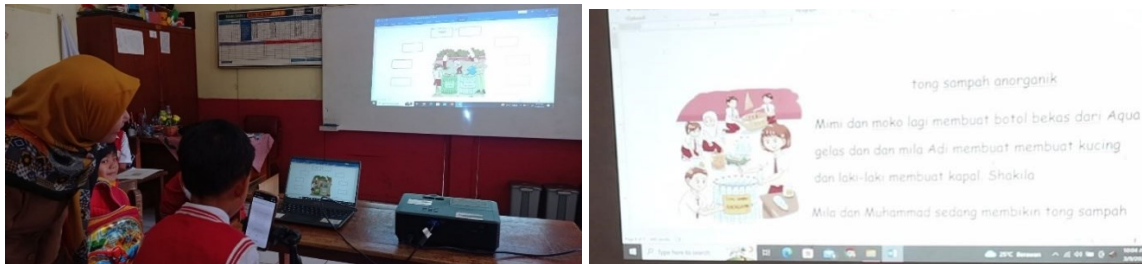


Figure 8 & 9. Smartphone-Assisted PWIM Implementation

There are three important things from Vygotsky to explain his learning theory, namely tools of the mind, zone of proximal development (ZPD), and scaffolding. Tools of the mind mean that mental work requires supporting tools to make it easier for children to understand a phenomenon, solve problems, remember, and think. For example stones, beads, and sticks are used as tools to help children understand the concept of numbers. ZPD is a concept about areas that will soon experience development. The term zone illustrates that development is not a point, but an area. This means that the aspect that develops is a range where the width of the range is determined by the help of more skilled people, which is called scaffolding. Scaffolding is assistance from other people who are more capable, more knowledgeable, and more skilled within the ZPD range to help children obtain higher learning outcomes (Daniels, 2016; Langford, 2005; Miller, 2011).

Based on Vygotsky's learning theory above, PWIM and smartphones as tools and teacher assistance are scaffolding. Application assistance is also a facility to serve different student abilities so that all students can reach their potential optimally. Picture word inductive models use the child's potential to think inductively. Picture word inductive models allow students to build generalizations that form the basis of structural and phonetic analysis. Thus PWIM facilitates the child's ability to think (Joyce & Weil, 2003).

Conclusion

This study proves the hypothesis that the inductive picture word model (PWIM) has a significant effect on students' basic literacy abilities. The different abilities of students can be helped by this model so that they can follow the learning well and develop their literacy potential optimally. For future researchers, it is recommended to use school populations in rural areas and the border between villages and cities.

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References

Borg, G. (2014). Applying Educational Research: How to Read, Do, and Use Research to Solve Problems of Practice. In *New York and london. Longman publishing Inc.*

- Calhoun, E. F. (1999). Beginning Reading and Writing With The Picture Word Inductive Model. In *Development*.
- Çetinkaya, F. Ç., Ateş, S., & Yıldırım, K. (2019). Effects of Interactive Book Reading Activities on Improvement of Elementary School Students'; Reading Skills. *International Journal of Progressive Education*, 15(3), 180–193. <https://doi.org/10.29329/ijpe.2019.193.13>
- Chandra, C., Rahman, R., Damaianti, V. S., & Syaodih, E. (2021). Krisis Kemampuan Membaca Lancar Anak Indonesia Masa Pandemi COVID-19. *Jurnal Basicedu*, 5(2), 903–910. <https://doi.org/10.31004/basicedu.v5i2.848>
- Christie, J. F., & Roskos, K. A. (2009). Play ' s Potential in Early Literacy Development. *Encyclopedia on Early Childhood Development*, 1–6.
- Damayanti, I. L., & Febrianti, Y. (2020). Multimodal literacy: Unfolding reading path in children's picture book and its potential for EFL classrooms. *Indonesian Journal of Applied Linguistics*, 9(3), 616–627. <https://doi.org/10.17509/ijal.v9i3.23212>
- Daniels, H. (2016). Vygotsky and Pedagogy. In *Vygotsky and Pedagogy*. <https://doi.org/10.4324/9781315617602>
- Dere, Z. (2019). Analyzing the Early Literacy Skills and Visual Motor Integration Levels of Kindergarten Students. *Journal of Education and Learning*, 8(2), 176. <https://doi.org/10.5539/jel.v8n2p176>
- Febriasari, L. K., & Supriatna, N. (2017). Enhance Environmental Literacy through Problem Based Learning. *Journal of Physics: Conference Series*, 895(1). <https://doi.org/10.1088/1742-6596/895/1/012163>
- Fitria, N., Amelia, Z., & Nurfadilah, N. (2022). Pengaruh Flashcard Path To Literacy terhadap Kemampuan Literasi Baca Tulis. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 6(5), 4039–4048. <https://doi.org/10.31004/obsesi.v6i5.2236>
- Ginsburg, H. P., & Oppen, S. (2016). *Piaget ' s Theory of Intellectual Development*. 1988, 1–344.
- Grimm, R. P., Solaria, E. J., Nancy, & Carolyn. (2018). *Running head: EARLY READING SKILL PROFILES Early Reading Skill Profiles in Typically Developing and At-Risk First Grade Readers to Inform Targeted Early Reading Instruction* Ryan P. Grimm. <https://doi.org/10.1016/j.jsp.2018.05.009>
- Gu, C., & Lornklang, T. (2021). The Use of Picture-word Inductive Model and Readers' Theater to Improve Chinese EFL Learners' Vocabulary Learning Achievement. *Advances in Language and Literary Studies*, 12(3), 120. <https://doi.org/10.7575/aiac.all.v.12n.3.p.120>
- Hamiddin, & Saukah, A. (2020). Investigating metacognitive knowledge in reading comprehension: The case of Indonesian undergraduate students. *Indonesian Journal of Applied Linguistics*, 9(3), 608–615. <https://doi.org/10.17509/ijal.v9i3.23211>
- Hartati, T., Andriani, E. N., Supriatna, N., & Nuriyanti, R. (2021). Development of Children's Literature Book Based on Primary School Students' Ecoliteration. *Social, Humanities, and Educational Studies (SHEs): Conference Series*, 4(1), 152. <https://doi.org/10.20961/shes.v4i1.48719>
- Jannah, S. R., Yusuf, M., Choirudin, C., Darmayanti, R., & Ningtyas, D. P. (2023). The Effect of Instructional Media and Interpersonal Intelligence on Early Reading Skills. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 7(2), 1346–1353. <https://doi.org/10.31004/obsesi.v7i2.3515>
- Jiang, X., & Dwyer Kyle, E. P. (2014). Vocabulary learning through use of the picture-word inductive model for young English learners in China: A mixed methods examination using Cognitive Load Theory. *Department of Curriculum and Instruction, Doctor of (3644776)*, 225. <https://doi.org/10.25148/etd.FI14071150>
- Jiang, X., & Perkins, K. (2013). A conceptual paper on the application of the picture word inductive model using Bruner's constructivist view of learning and the Cognitive Load Theory. *Interdisciplinary Journal of Teaching and Learning*, 3(1), 8–17. <https://files.eric.ed.gov/fulltext/EJ1063072.pdf>
- Joyce, B., & Weil, M. (2003). Fifth Edition Models of Teaching. *Prentice Hall of India*, 1–479.

- Kemdikbud. (2021). *Modul Literasi Baca Tulis*. 1–32.
- Khofifah, S., & Ramadan, Z. H. (2021). Literacy conditions of reading, writing and calculating for elementary school students. *Journal of Educational Research and Evaluation*, 5(3), 342–349. <https://doi.org/10.23887/jere.v5i3.37429>
- Langford, P. E. (2005). Vygotsky's developmental and educational psychology. In *Vygotsky's Developmental and Educational Psychology*. <https://doi.org/10.4324/9780203499573>
- Maulani, S., Musthafa, B., Damaianti, V. S., Agustin, M., & Puspita, R. D. (2021). Applying social cognitive based literacy learning model to improve students' reading and reasoning skill in Indonesian elementary school. *PalArch's Journal of Archaeology of Egypt/Egyptology*, 18(9), 1205–1224. <https://archives.palarch.nl/index.php/jae/article/view/9495>
- Miller, R. (2011). Vygotsky In Perspective. In *Vygotsky In Perspective* (Vol. 4, Issue 1).
- Mohammed Fahad Alsobaie. (2015). The Principal's Relationship with Teacher and Development Literacy of Elementary School Students. *Journal of Education and Practice*, 6(35), 149–155. <https://www.iiste.org/Journals/index.php/JEP/article/view/27905>
- Ninawati, M. (2019). Efektivitas Model Pembelajaran Literasi Kritis Berbasis Pendekatan Konsep Untuk Meningkatkan Keterampilan Menulis Kreatif Siswa Sekolah Dasar. *Pendas : Jurnal Ilmiah Pendidikan Dasar*, IV, 68–78. <https://doi.org/10.23969/jp.v4i1.1747>
- Nurmawati, F., Rukayah, & Budiarto, T. (2020). Peningkatan Keterampilan Menulis Teks Narasi melalui Model Pembelajaran Circuit Learning pada Peserta Didik Kelas V Sekolah Dasar. *Jurnal Didaktika Dwija Indria (Solo)*, 8(2), 1–7. <https://doi.org/10.20961/ddi.v8i03>
- OECD. (2021). 21st-Century Readers. In *Oecd*.
- Oktadiana, B. (2019). Analisis Kesulitan Belajar Membaca Permulaan Siswa Kelas II pada Mata Pelajaran Bahasa Indonesia di Madrasah Ibtidaiyah Munawariyah Palembang. *JIP Jurnal Ilmiah PGMI*, 5(2), 143–164. <https://doi.org/10.19109/jip.v5i2.3606>
- Oktafiani, D., & Husnussalam, H. (2021). Improving Students' Writing Skills in Descriptive Text Using Picture Word Inductive Model (PWIM) Strategy. *PROJECT (Professional Journal of English Education)*, 4(3), 420. <https://doi.org/10.22460/project.v4i3.p420-425>
- Paridawati, I., Daulay, M. I., & Amalia, R. (2021). Persepsi Orangtua Terhadap Penggunaan Smartphone pada Anak Usia Dini di Desa Indrasakti Kecamatan Tapung Kabupaten Kampar. *Journal Of Teacher Education*, 2(2), 28–34. <https://doi.org/10.3100/jote.v2i2.1329>
- Pratiwi, B., & Puspito Hapsari, K. (2020). Analisis Kemampuan Berpikir Tingkat Tinggi Melalui Pemanfaatan YouTube Sebagai Media Pembelajaran Bahasa Indonesia. *Jurnal Ilmiah Sekolah Dasar*, 4(2), 282. <https://doi.org/10.23887/jisd.v4i2.24238>
- Pratiwi, I., Solihin, L., Atmadireja, G., & Utama, B. (2020). *Belajar dari Pinggiran* (P. Retnaningdyah, K. Julizar, & I. Widjaja, Eds.). Puslitjakdikbud.
- Putri, D. P., Yuliansyah, M., Al-Banjari, M. A., & Handayani, E. S. (2023). Adiksi Game Online dan Smartphone Terhadap Prokrastinasi Akademik di SMKN Martapura. *Jurnal Pendidikan Dan Pendidikan Keislaman*, 17(6), 1–12. <https://doi.org/10.33578/mbi.v17i6.245>
- Rahman, Hartati, T., Amelia, D., Rikmasari, R., Yugafiati, R., Hardini, T. I., & Sauri, S. (2020). *The Use of Circuit Learning Model in Improving Students' Writing Skills in Elementary School*. 509(Icollite), 586–591. <https://doi.org/10.2991/assehr.k.201215.091>
- Rahman, R., Sopandi, W., Widya, R. N., & Yugafiati, R. (2019). Literacy in The Context of Communication Skills for The 21st Century Teacher Education in Primary School Students. *International Journal of Science and Applied Science: Conference Series*, 3(1), 101. <https://doi.org/10.20961/ijsascs.v3i1.32462>
- Rahman, R., Widya, R. N., & Yugafiati, R. (2020). *Membaca dan Menulis* (A. W. Sakti, Ed.; 1st ed.). ALQAPRINT.

- Rahman, R., Widya, R. N., Yugafiatu, R., & Sakti, A. W. (2021). *Gerakan Literasi Sekolah* (A. Sumiati, Ed.; 4th ed.). UPI PRESS.
- Rais, M., Aryani, F., Ahmar, A. S., Arfandi, H., & Ahmad, W. K. S. (2018). Learning Media Edu-Games “my Profession” as an Effort to Introduce Various Types of Profession in Early Childhood Education Students. *Journal of Physics: Conference Series*, 1028(1). <https://doi.org/10.1088/1742-6596/1028/1/012091>
- Rosyada, A. (2018). Improving Students’ Critical Thinking to Develop Variety Essays through Picture Word Inductive Model. *UICELL Conference Proceeding, November*, 50–57. <https://garuda.kemdikbud.go.id/documents/detail/877854>
- Sari, P. A. P. (2020). Hubungan literasi baca tulis dan minat membaca dengan hasil belajar bahasa indonesia. *Journal for Lesson and Learning Studies*, 3(1), 141–152. <https://doi.org/10.23887/jlls.v3i1.24324>
- Triwahyuni, E., Degeng, I. N. S., Setyosari, P., & Kuswandi, D. (2020). The effects of picture word inductive model (Pwim) toward student’s early reading skills of first-grade in the primary school. *Elementary Education Online*, 19(3), 1523–1526. <https://doi.org/10.17051/ilkonline.2020.733100>
- Ul Haq, N. (2021). Penggunaan Smartphone Terhadap Perubahan Pola Sosialisasi Pada Anak Usia Dini. *Dinamika Sosial Budaya*, 23(2), 304–310. <http://dx.doi.org/10.26623/jdsb.v23i2.3427>
- Widyaningrum, H. K., & Hasanudin, C. (2019). Kajian Kesulitan Belajar Membaca Menulis Permulaan (MMP) di Sekolah Dasar. *Pedagogia: Jurnal Pendidikan*, 8(2), 189–199. <https://doi.org/10.21070/pedagogia.v8i2.2219>
- Wijaya A., R., Mulyati, Y., Damaianti, V. S., & Sumiyadi, S. (2018). *Developing Reading Skills and Beginning Writing through Literary Literacy*. 263(Iclle), 135–141. <https://doi.org/10.2991/iclle-18.2018.21>
- Zen, Z., Reflianto, R., Ariani, F., & Hidayati, A. (2023). *The effect of flipped digital classroom method using moodle and student engagement on reading comprehension* Corresponding Author : 9(1), 1–11. <http://dx.doi.org/10.29210/020232668>
- Zhao, M., & Lornklang, T. (2019). The Use of Picture Word Inductive Model Focusing on Chinese Culture to Promote Young Learners’ English Vocabulary Acquisition. *Advances in Language and Literary Studies*, 10(4), 105. <https://doi.org/10.7575/aiac.all.v.10n.4p.105>